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M E M O R A N D U M

TO: Susan Sylvester, Director, Operations and Hydrologic
Data Management Department

FROM: SFWMD Staff Environmental Advisory Team

DATE: May 25, 2010

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Discharge from Lake Kissimmee averaged 2667 cubic per second (cfs) at S65 over the week. Lake Okeechobee stage is 14.49 feet NGVD, which is 0.15 feet lower than a week ago, 0.31 feet lower than a month ago, 3.72 feet higher than it was a year ago, and 2.51 feet higher than the simulated average using the current regulation schedule. Average salinity levels in the St. Lucie estuary are poor for the oyster, *Crassostrea virginica*, considering the location in the estuary and time of year. In the Caloosahatchee Estuary, the 30-day average salinity at the Ft. Myers station is 0.3 psu; as such, conditions are good in the upper estuary. Salinities at Shell Point and the Sanibel Causeway indicate that conditions are fair for seagrass in San Carlos Bay.

Depths considered good for wading bird feeding have expanded, though large areas of Water Conservation Area (WCA) -1 and -3A are still too deep. Good recession rates have occurred widely throughout the Greater Everglades with local exceptions in central and northwestern WCA-3A and in Everglades National Park (ENP). While most of the entire region north of ENP remains too deep for wading bird foraging, conditions have improved over the last three weeks. Salinity was generally stable across Florida Bay.

Weather Conditions and Forecast

Increased showers and strong storms today with a focus interior and south. Our atmosphere is more unstable with slightly higher moisture than yesterday as a large low about 500 miles east of north Florida drifts westward. The sea breeze fronts along both coasts should move inland with the individual storms drifting southward. Based on the atmosphere's temperature and moisture profile some storms could produce small hail, strong wind gusts, and local rains to 2.5 inches. Look for activity to diminish or move off the southeast coast early evening. A little drier air is expected to pinwheel around the deep low as it begins exit eastward on Wednesday. Therefore, expect less activity across the Kissimmee Valley tomorrow with storms focusing southeast of the Lake. Northwest

steering winds dominate behind the exiting low on Thursday and Friday. In general, look for below average activity but with some focus east of the Lake both days. The next ten days precipitation outlook is near average with low confidence.

KISSIMMEE WATERSHED

The Kissimmee Basin received less than 0.1 inch of rainfall in the past week (SFWMD Daily Rainfall Report 5/25/2010).

Upper Kissimmee Basin

Stages in the Kissimmee Chain of Lakes (KCOL) are at or within 0.4 feet above regulation schedule (**Table 1**). **Water bodies marked (C) or (SK) are being operated under revised temporary deviations (Figures 1-7). The departures shown are from the current temporary schedules (SFWMD Operations Control Division).**

Table 1. Departures from KCOL flood regulation or temporary deviation schedules.

5/25/2010

Water Body	Structure	Deviation Schedule	Today's Regulation Stage (SFWMD Operations Control)	Today's Stage (SFWMD Operations Control)	Departure (calculated field)	Departure Last Week
Lake Hart and Mary Jane	S62	C	59.5	59.46	-0.04	0.02
Lakes Myrtle, Preston, and Joel	S57	C	59.55	59.94	0.39	0.39
Alligator Chain	S60	C	62	62.02	0.02	0.51
Lake Gentry	S63		59.66	59.51	-0.15	0.03
East Lake Toho	S59	SK	55.7	55.49	-0.21	-0.02
Lake Toho	S61	SK	52.69	52.59	-0.10	-0.02
Lakes Kissimmee, Cypress, and Hatchineha	S65	SK	49.2	49.05	-0.15	0.04

C = temporary deviation for construction

SK = temporary deviation for snail kite habitat

Lower Kissimmee Basin (discharges, stages, and dissolved oxygen concentrations are **weekly averages** from SFWMD **DualTrend**).

- Average discharge at S-65x structures over the past week ranged from 2400 cfs – 2600 cfs (Table 2).
- Okeechobee Field Station continues exotic plant control treatments in the Pool C river channel this week.

Table 2. Discharge at S-65x structures and Phase I area river channel DO and floodplain mean water depth.

5/25/2010

Location	Metric	This week's average	Last week's average
S-65	Discharge (cfs)	2667	2359
S-65A	Discharge (cfs)	2621	2235
S-65C	Discharge (cfs)	2366	2495
	Headwater stage (feet)	35.3	35.1
S-65D	Discharge (cfs)	2423	2559
S-65E	Discharge (cfs)	2260	2511
Phase I area river channel	DO concentration (mg/L)	2.6	3.0
Phase I Floodplain	Mean depth (4/23/2010)*	1.7	1.6

* South Florida Water Depth Assessment Tool (SFWDAT)

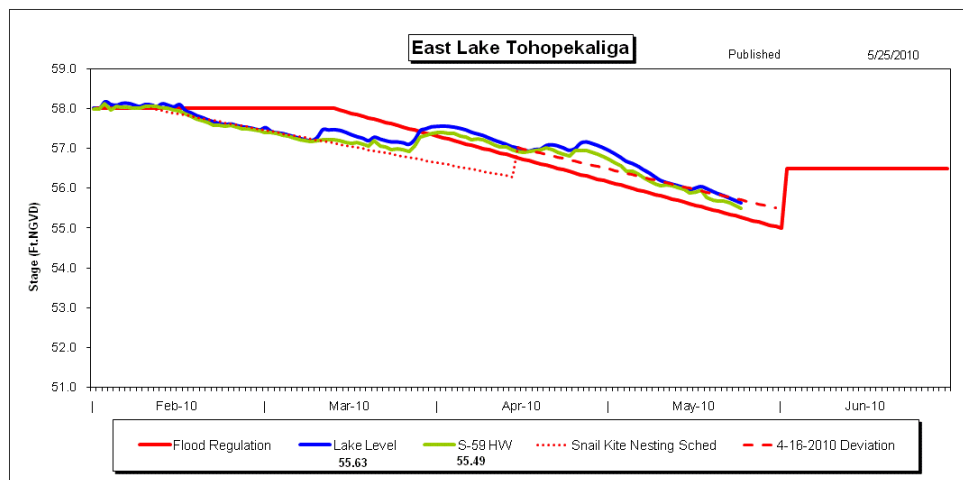


Figure 1

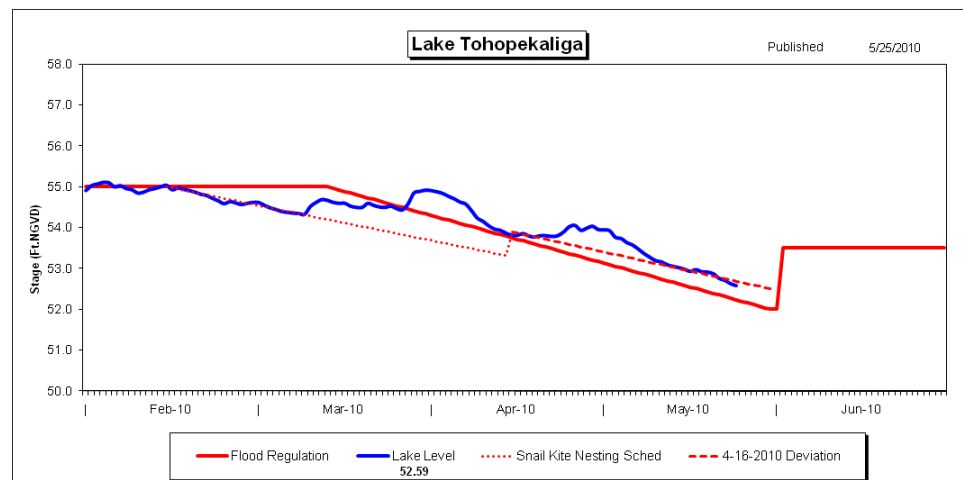


Figure 2

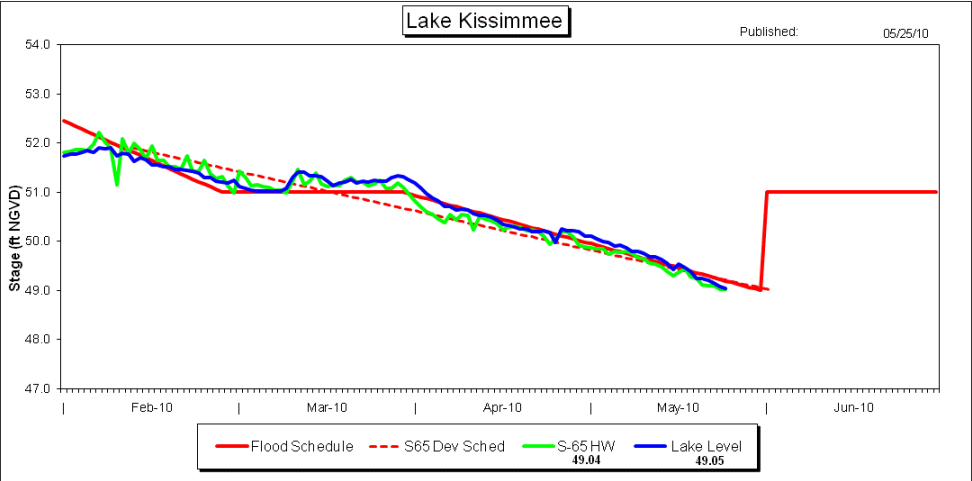


Figure 3

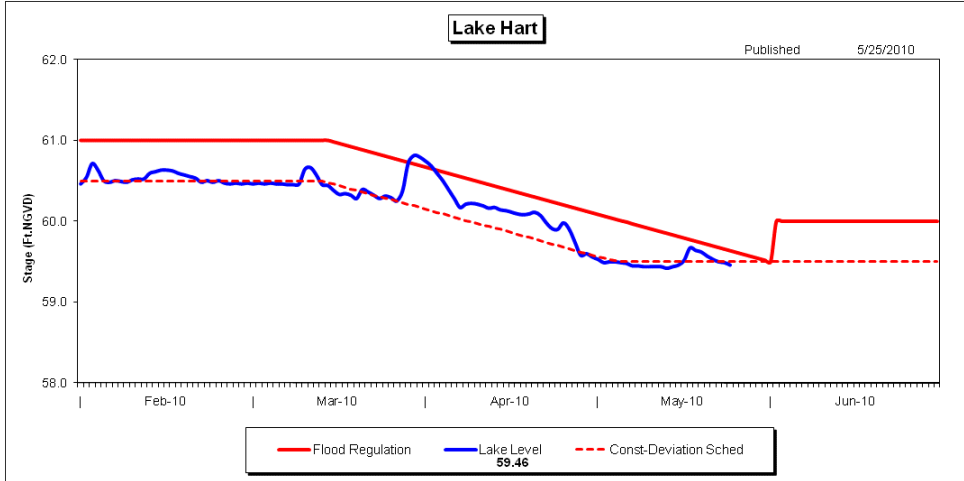


Figure 4

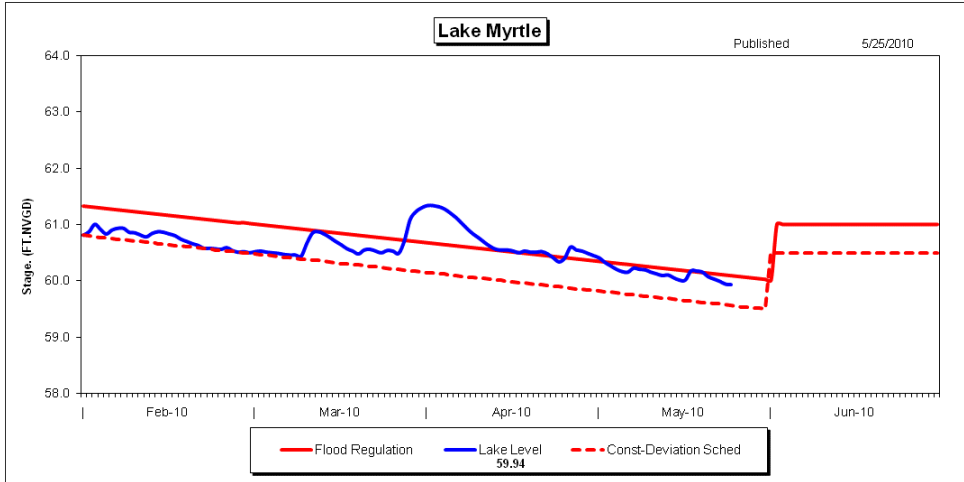


Figure 5

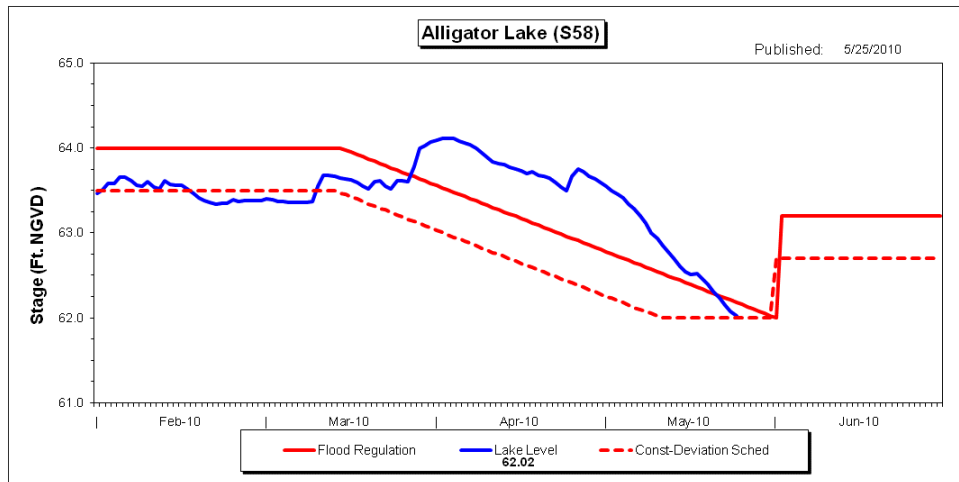


Figure 6

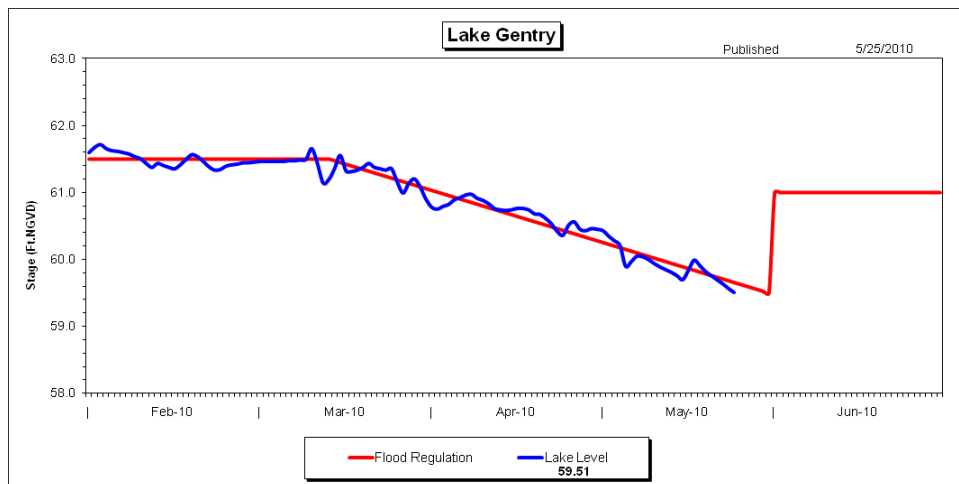


Figure 7

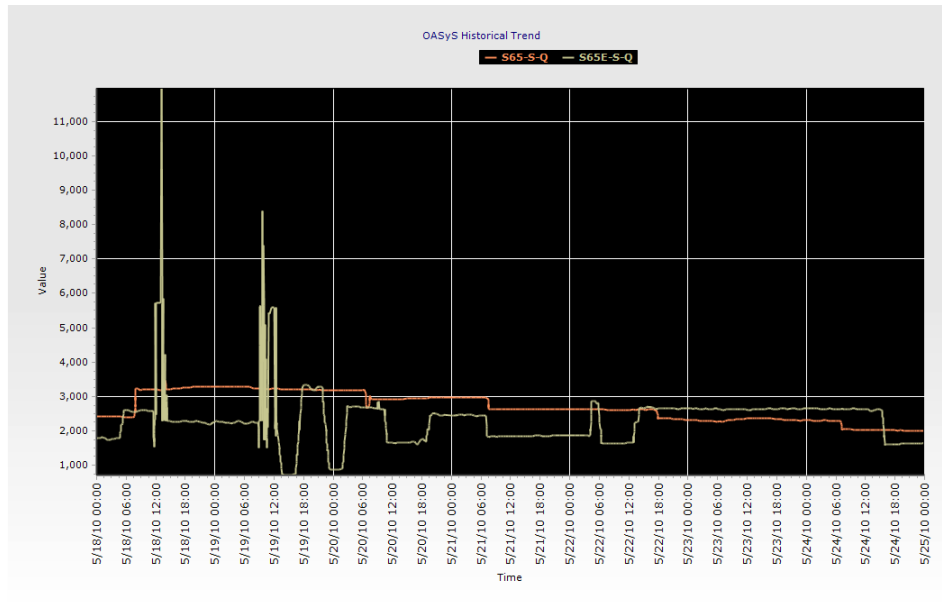


Figure 8

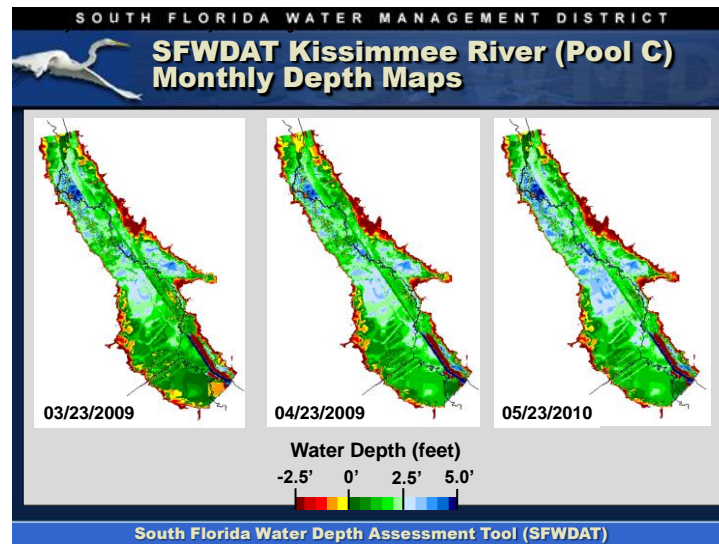


Figure 9

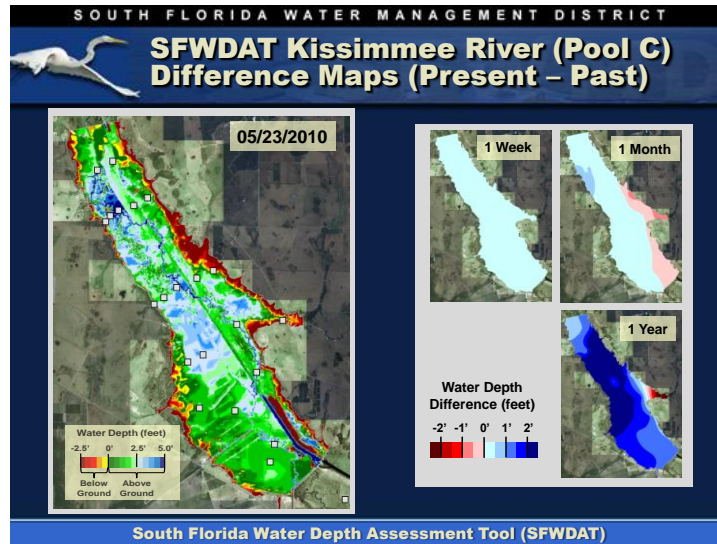


Figure 10

Water Management Recommendations

No new recommendations at this time.

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is 14.49 feet NGVD for the period ending at midnight May 24, 2010, which is 0.15 feet lower than a week ago, 0.31 feet lower than a month ago, and 3.72 feet higher than a year ago. The current stage is 1.32 feet above the historical average for this date and 2.51 feet higher than the simulated average using the current regulation schedule (LORS2008). Total inflows are reported as 2,479 cfs and include flows as listed in the following table:

Structure	Flow cfs
S65E	2,459
S71	0
S72	0
S129 pumps	0
S131 pumps	0
Fish Eating Creek	20

Total rainfall directly over the Lake, as reported by Raindar was 0.056 inches for the past seven days. Total Lake outflow data is unavailable due to missing data for S308, however currently reported structure flows are as follows:

Structure	Flow CFS
S77	2833
S308	No Data
S354	632
S352	138

S351	516
L8	264

Lake Okeechobee continued a moderate recession this week with light rainfall. Ecological conditions are generally good at present with Fish and Wildlife Commission (FWC) again reporting improved water clarity in the littoral edge zone and active apple snail egg production. Recent observations by FWC and SFWMD indicate minimal wading bird foraging. Non-wading bird (red-winged blackbird, grackles, and bitterns) presence is high.

Continuing efforts to lower the Lake at this time remain beneficial and appear to be stopping the negative impacts to littoral edge emergent and submerged vegetation which have been reported recently. Care should be taken to avoid too rapid of a recession in Lake stage since rainfall has diminished on the Lake and in the watershed and that appears to be the likely condition for the next week or so.

Water Management Recommendations

The operational recommendation for Lake Okeechobee is to continue the current recession in preparation for the onset of the anticipated rainy season increase in water levels. However, the recession should not exceed one foot every 30 days to minimize potential negative impacts on inner marsh and littoral fringe communities that were recently inundated as a result of this year's wetter than usual conditions.

ESTUARIES

St. Lucie Estuary

Over the past week, flow averaged 1271 cfs at S308 and 1294 cfs at S-80. Provisional data indicate that discharge averaged 63 cfs at S-49 on C-24 and 0 cfs at S-97 on C-23. The current weekly average salinities (in bold) at the three monitoring sites in the St. Lucie Estuary are given below in practical salinity units (psu), along with the previous week's (in parenthesis).

	Weekly Average Salinity (psu)		
Sampling Site	Surface	Bottom	Envelope
HR1 (N. Fork)	2.0 (1.5)	3.0 (1.6)	
US1 Bridge	4.0 (1.2)	4.7 (1.3)	8.0 – 25.0
A1A Bridge	12.5 (8.3)	22.0 (16.5)	20.0 – 31.0

Salinity increased over the past week throughout the estuary. Weekly average surface salinity at both the US1 and A1A Bridges is below the preferred range, except bottom salinity at A1A Bridge. Salinity conditions in the estuary are poor considering the time of year, the location in the estuary, and salinity preference of the oyster, *Crassostrea virginica*.

Caloosahatchee Estuary

During the past week, flow averaged 2521 cfs at S-77, 3173 cfs at S-78, and 4235 at S-79. The concentration of chlorides at the Olga Plant was 72 ppm yesterday. The

current weekly average salinities (in bold) at the six monitoring sites in the Caloosahatchee estuary are given below in practical salinity units (psu), along with the previous week's (in parenthesis).

Weekly Average Salinity (psu)		
Sampling Site	Surface	Bottom
S-79 (Franklin Locks)	0.2 (0.2)	0.2 (0.2)
BR31	0.2 (0.2)	0.2 (0.2)
Val I75	0.2 (0.2)	0.2 (0.2)
Ft. Myers Yacht Basin	0.3 (0.3)	0.3 (0.3)
Marker 52	0.3 (0.2)	0.3 (0.3)
Cape Coral	1.2 (1.5)	1.8 (2.2)
Shell Point	13.1 (15.4)	15.3 (17.2)
Sanibel	24.5 (27.4)	27.2 (29.1)

Average salinity remained the same in the upper estuary and slightly decreased downstream of Cape Coral Bridge over the past week. Since the estimated 30-day average salinity at Ft. Myers is 0.3 psu, conditions are good in the upper estuary. Salinities at Shell Point and the Sanibel Causeway indicate that conditions are fair for seagrass in San Carlos Bay.

Monitoring data collected by the River, Estuary and Coastal Observing Network (RECON) of Sanibel-Captiva Conservation Foundation (SCCF) indicated that dissolved oxygen concentrations at Ft. Myers ranged between 5.58 and 7.70 mg/l and at Shell Point between 3.0 and 7.2 mg/l. Chlorophyll *a* at Ft. Myers ranged between 1.52 and 2.25 ug/l. At Shell Point Chlorophyll *a* concentrations generally ranged between 1.55 and 4.48 ug/l.

FWRI (Fish and Wildlife Research Institute) reports that *Karenia brevis*, the Florida red tide organism, was not detected in water samples collected this week alongshore of Pinellas, Manatee, Charlotte, Lee and Collier counties or offshore of Pinellas County and the Florida Keys (Monroe County). One sample (out of 31 total samples) collected alongshore of Sarasota County contained background concentrations of *K. brevis*.

Water Management Recommendations

Until recently, our best adaptive management efforts to maintain favorable salinity conditions for oysters and other biota in these estuaries have been successful. To lower the Lake, large regulatory releases need to be conducted to the St. Lucie (SLE) and the Caloosahatchee (CE) estuaries of up to daily averages of 1170 cfs at S-80 and 3000 cfs at S-79. Inflows of these magnitudes in concert with watershed runoff will threaten the viability of oysters remaining in the estuaries and seagrass habitats in the Indian River Lagoon (IRL) on the East coast and San Carlos Bay (SCB) on the West Coast. Many of the marine inhabitants of these seagrass habitats cannot tolerate salinity below about 20 psu for an undetermined period of time. Therefore, our adaptive management recommendations need to shift focus from the inner estuary to the outer estuary by protecting these marine environments from unfavorable salinity. A

performance measure is proposed for both estuaries to address this concern for our marine inhabitants.

Performance Measure (PM) update: St. Lucie estuary

The PM for the SLE will be based on avoiding salinities less than 20 psu over the grass beds north of the St. Lucie Inlet and south of the Stuart Causeway. High frequency salinity monitors will be deployed in this seagrass area. Salinity data will be obtained weekly when observations of seagrass conditions are documented. It is recommended that a pulse regulatory release averaging 1170 cfs for 10 days be continued, after the completion of the present 10 day pulse release, as follows:

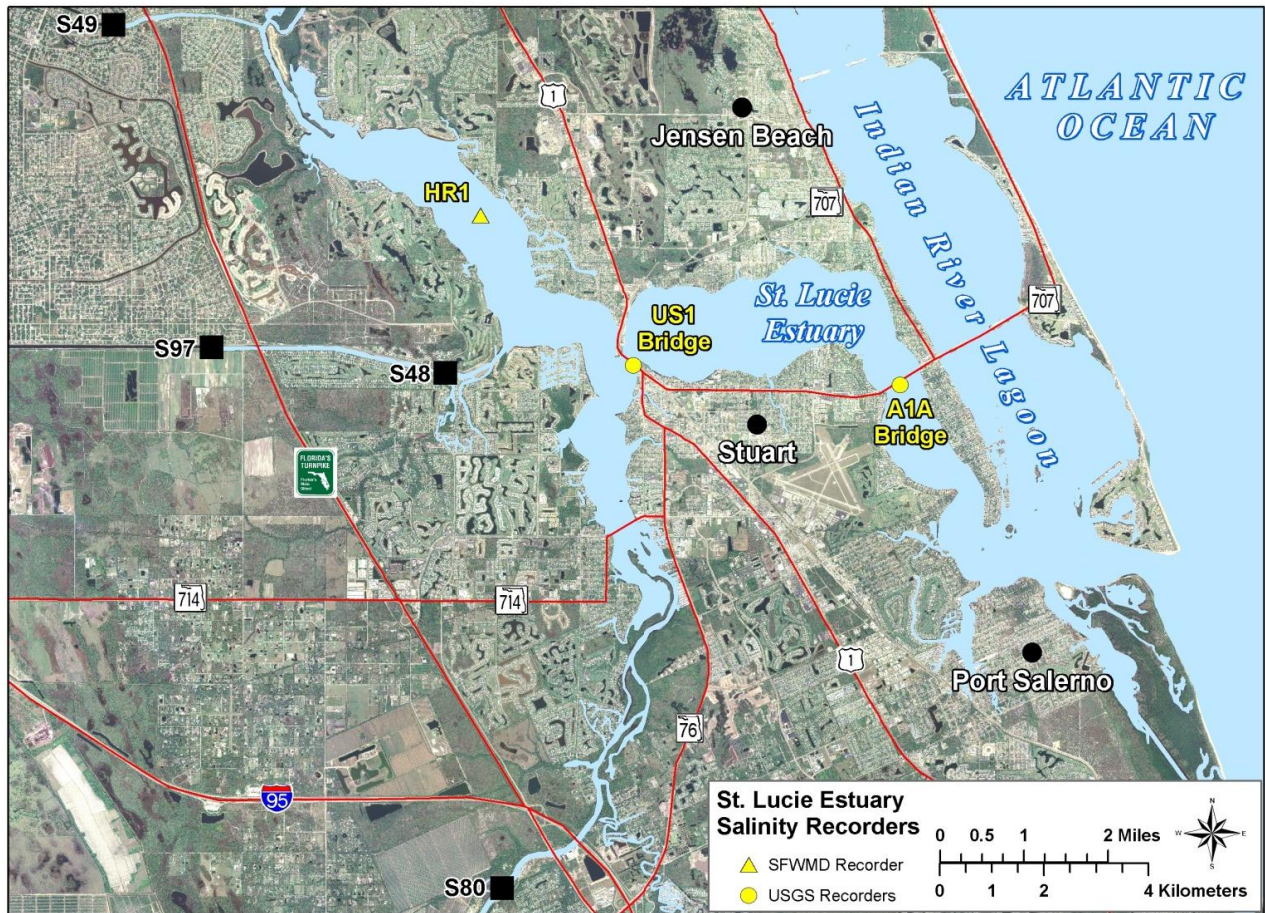
Days 1 to 10: 1500, 1500, 1400, 1400, 1300, 1300, 1100, 900, 650, and 650 cfs.

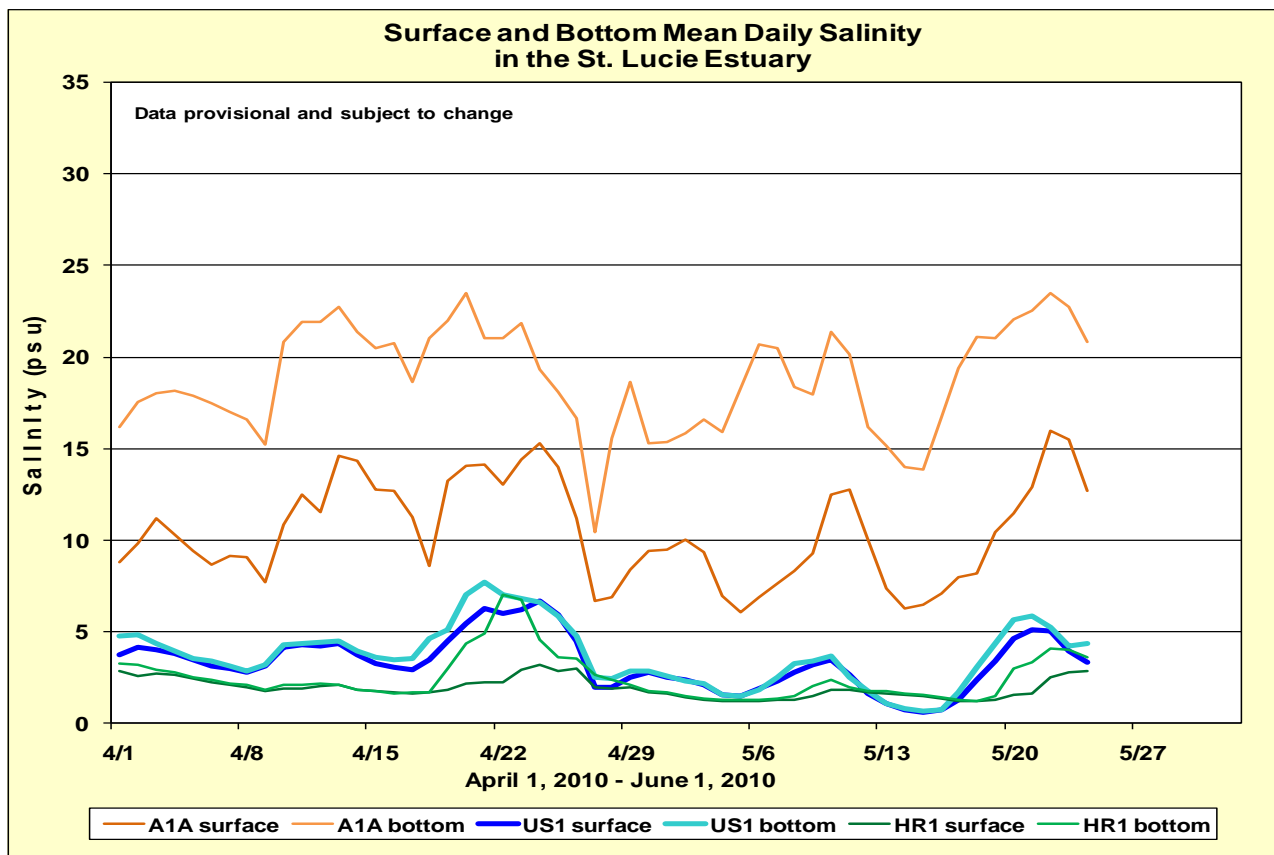
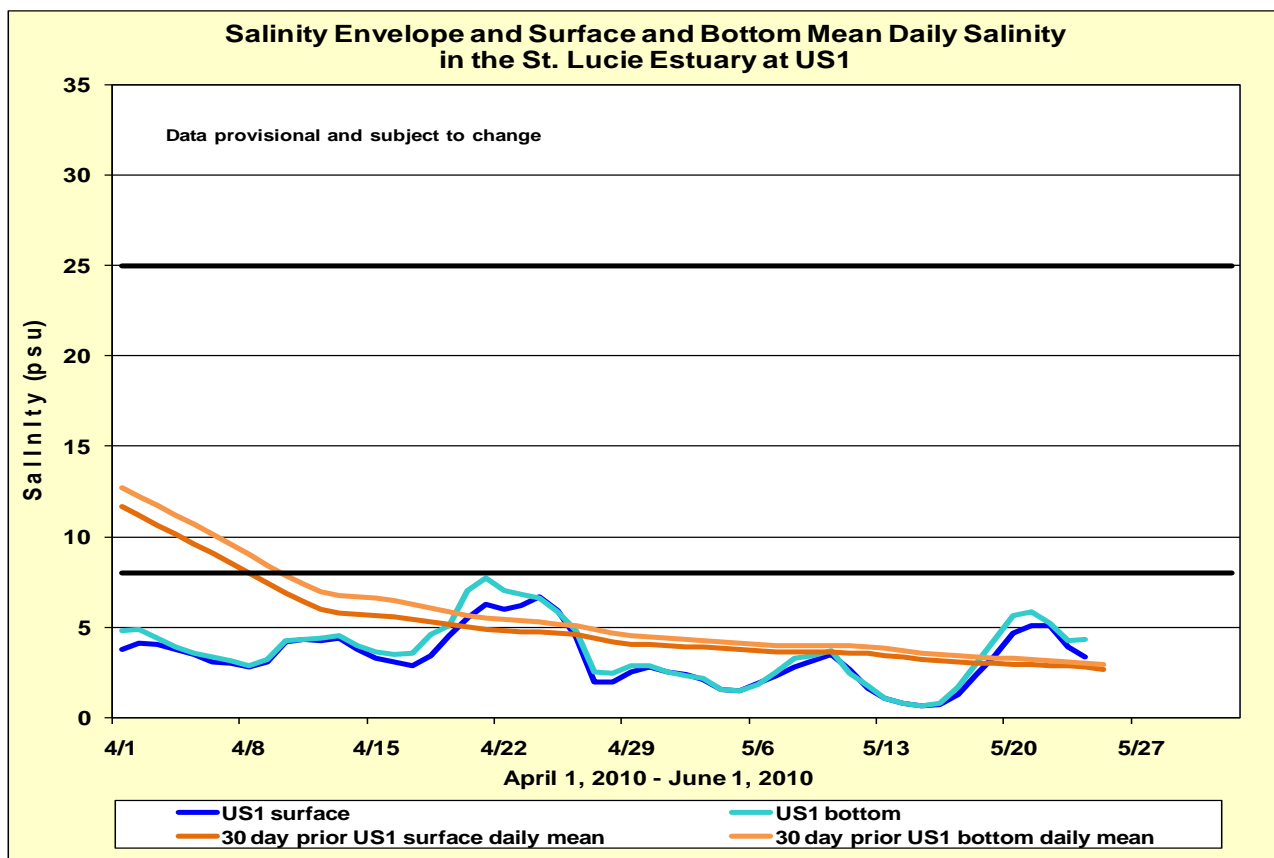
The aforementioned flows are guidelines and may be modified following adaptive management protocol.

Performance Measure (PM) update: Caloosahatchee estuary

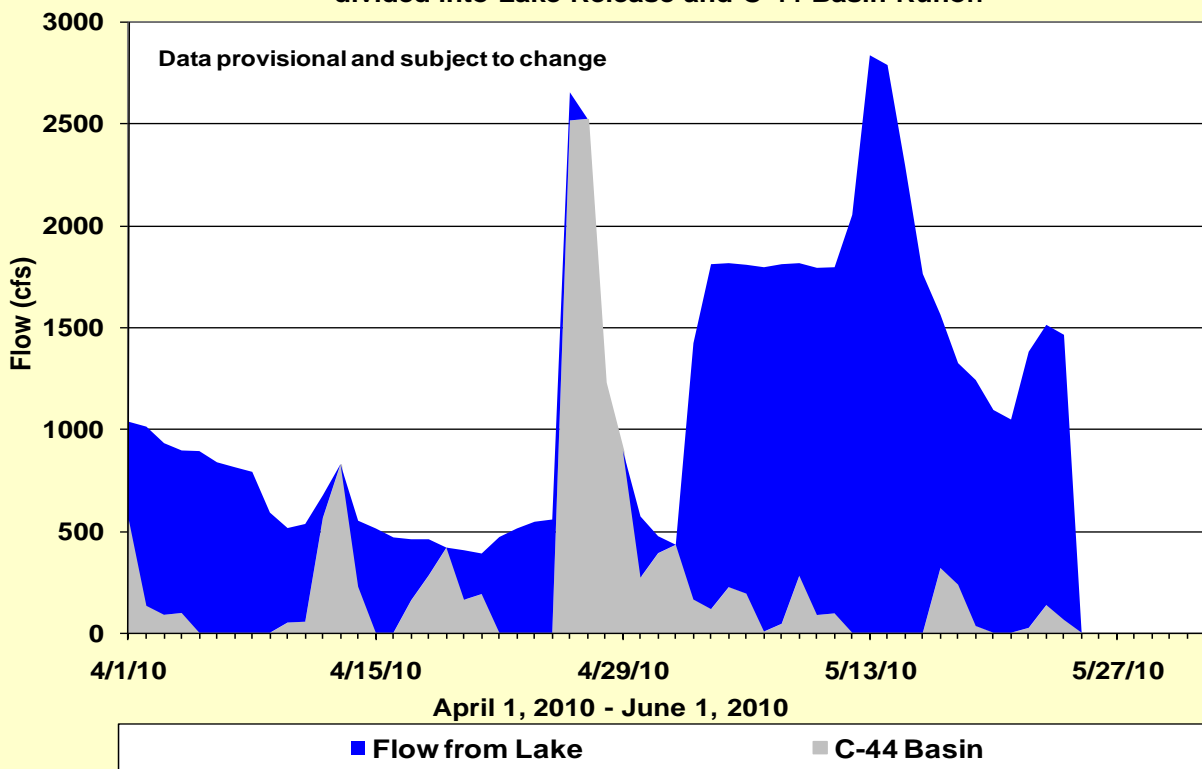
Several salinity gages are already in place to observe the salinity in the San Carlos Bay area. This area will be represented by salinity at Shell Point and the Sanibel Causeway. Regression analysis ($R^2 = .88$) reveals when the daily average salinity at Shell Point is 15 psu, the daily average salinity at the Sanibel Causeway is about 24 psu. Therefore, these two salinity measures should be indicative of salinity near 20 psu in the Bay grass beds. Additional observations need to be made to confirm this analysis; however, until then it is recommended that we use this described PM. Using this PM, salinities have increased to 16 psu and Gulf waters are beginning to penetrate San Carlos Bay area. It is recommended that a 10 day pulse regulatory release averaging 3000 cfs from S-79 be continued as follows after the completion of the present pulse being implemented:

Days 1 to 10: 3500, 3500, 3500, 3000, 3000, 3000, 3000, 2500, 2500, and 2500 cfs.

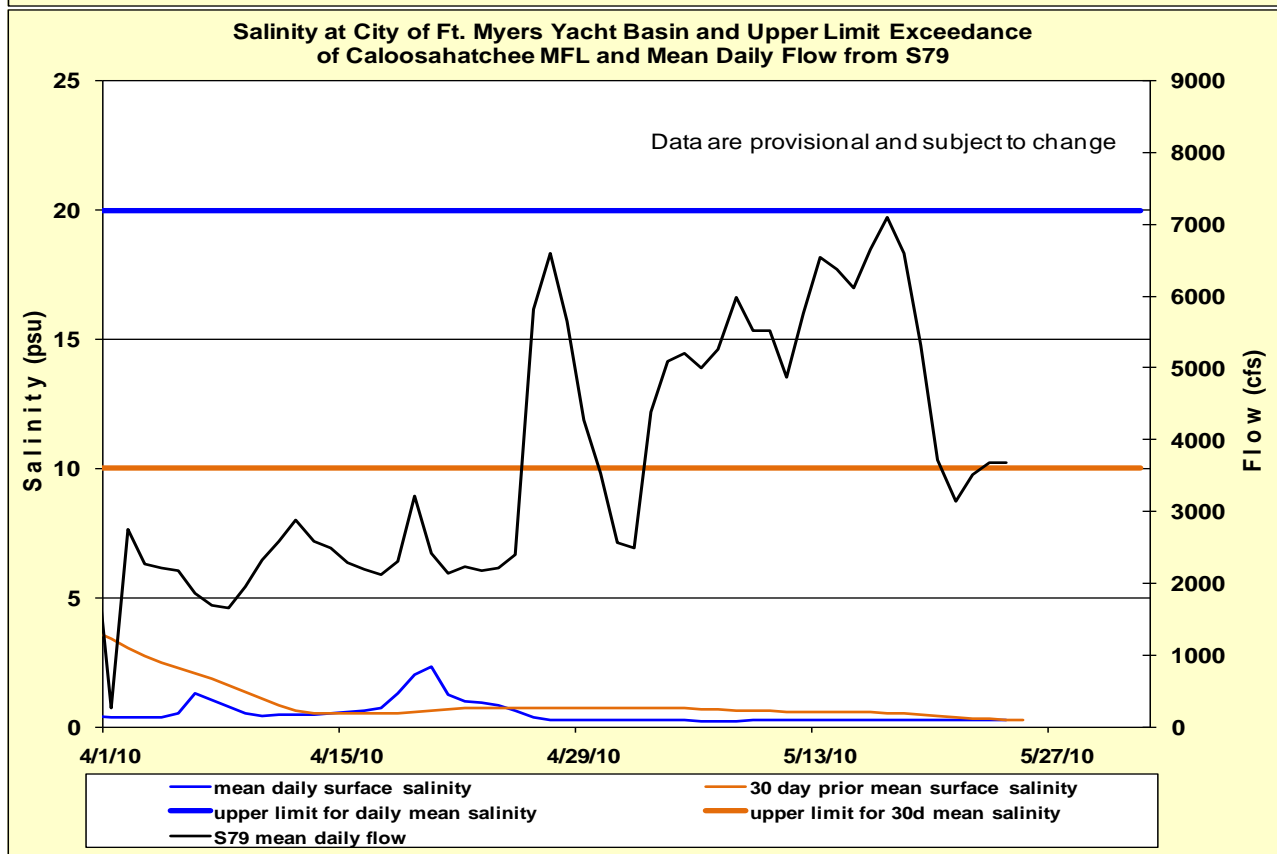
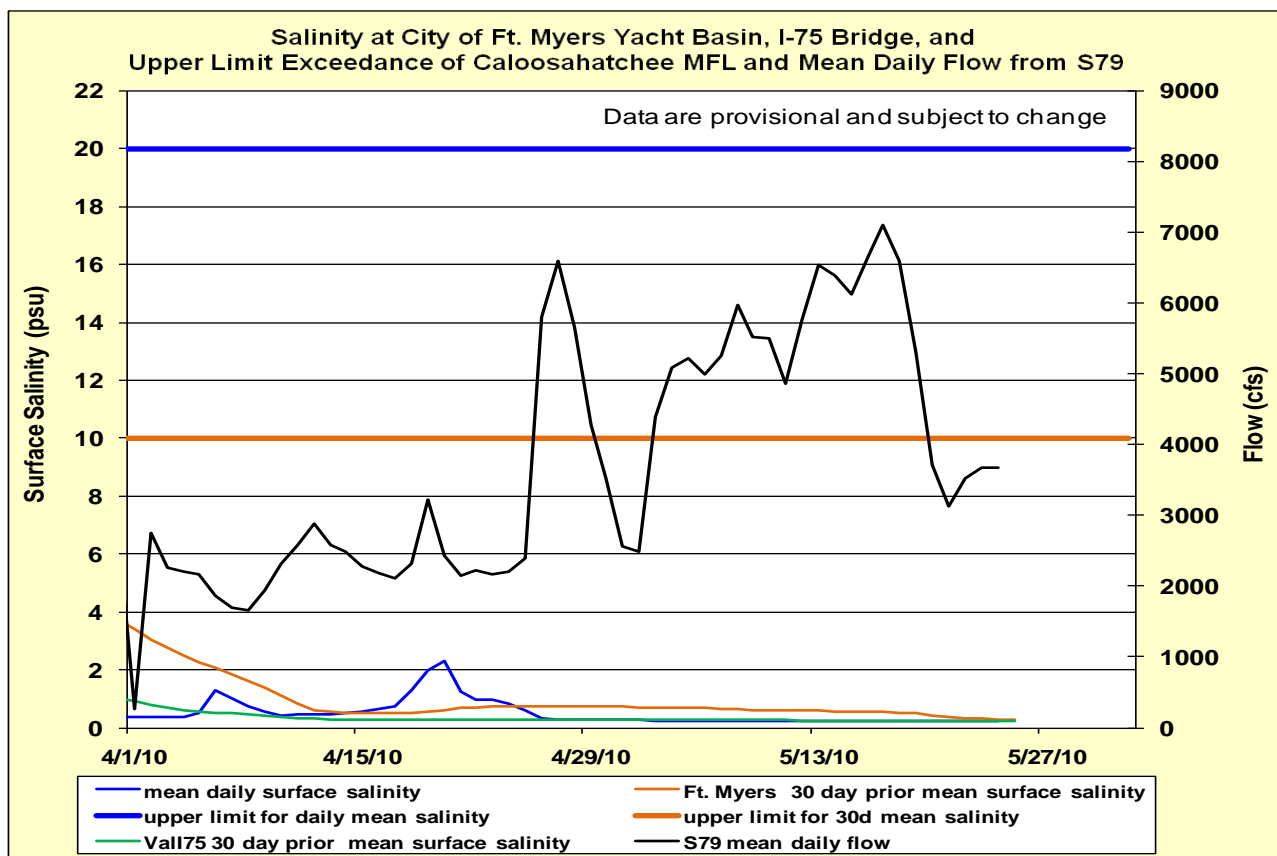


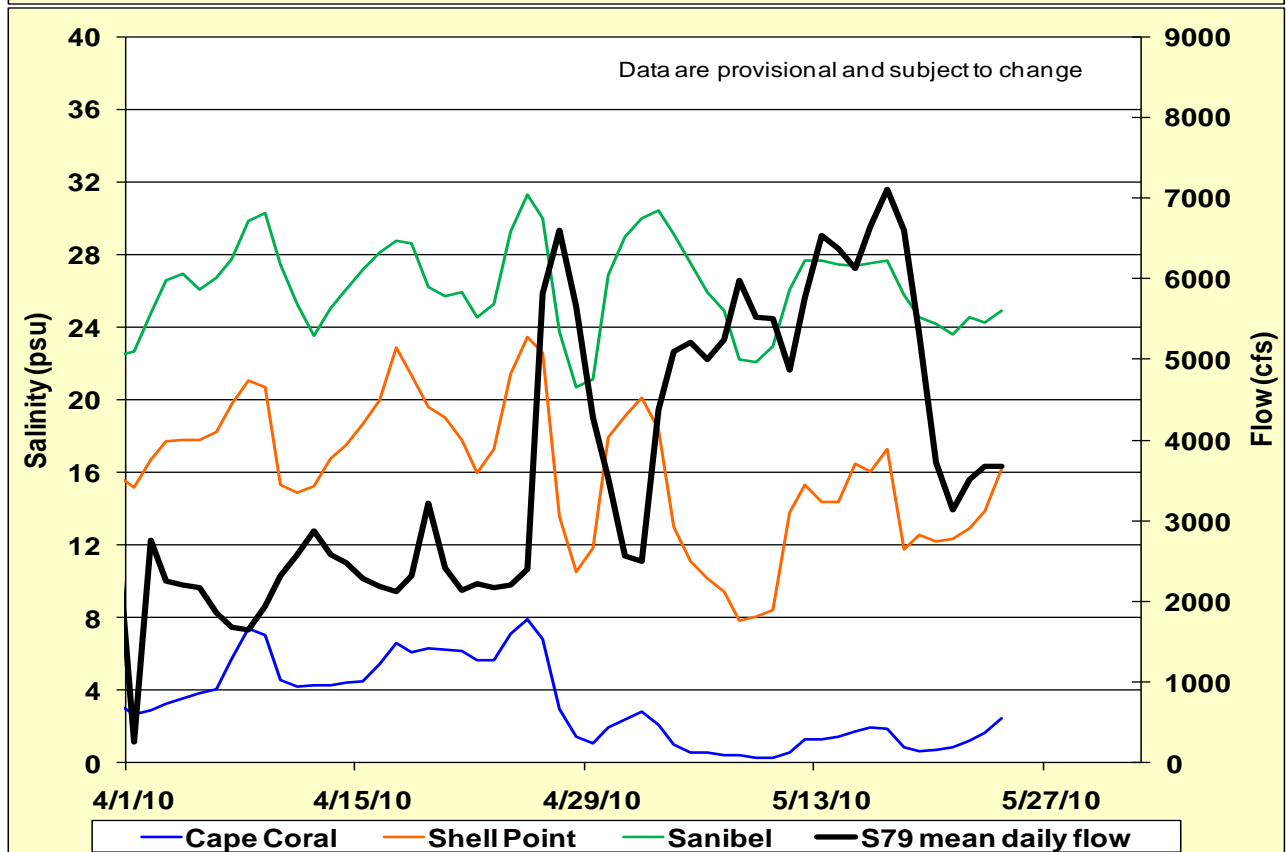
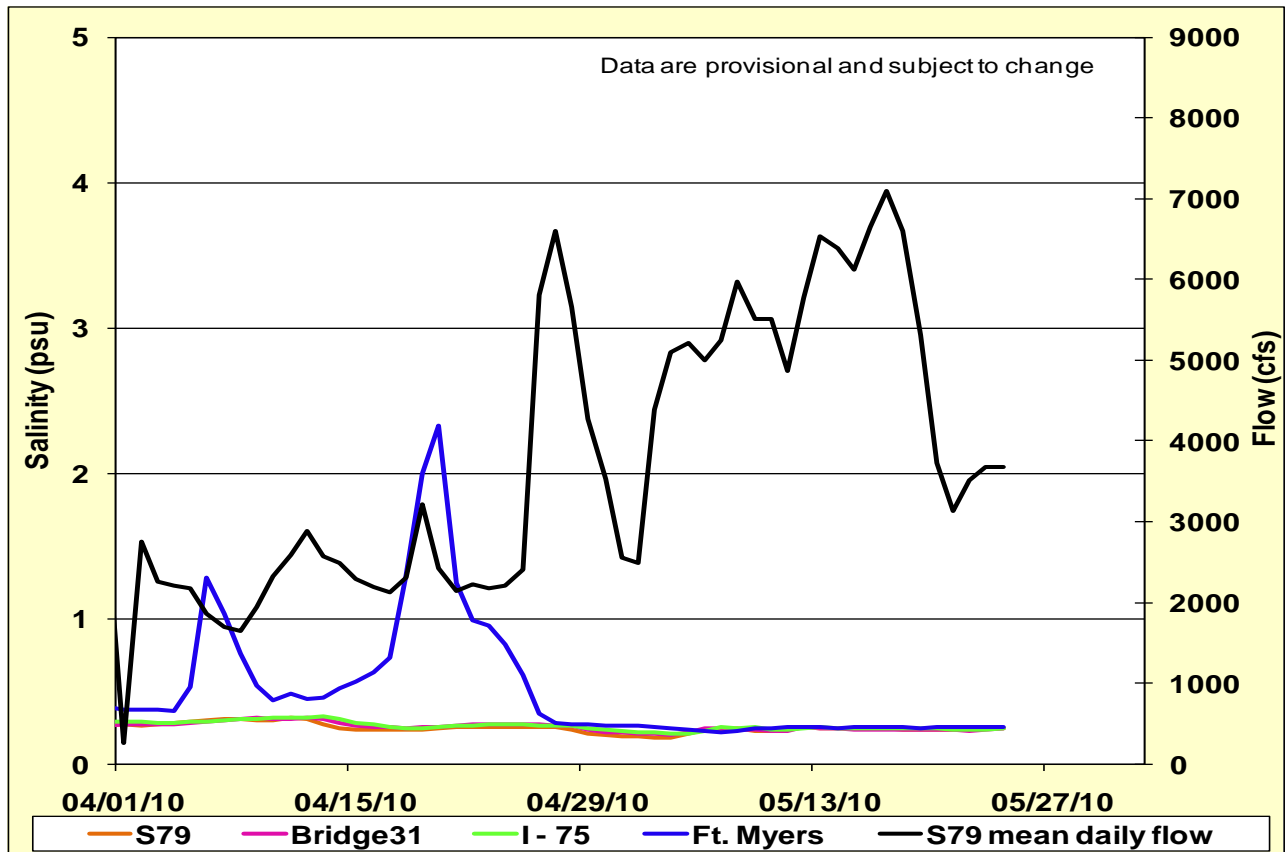


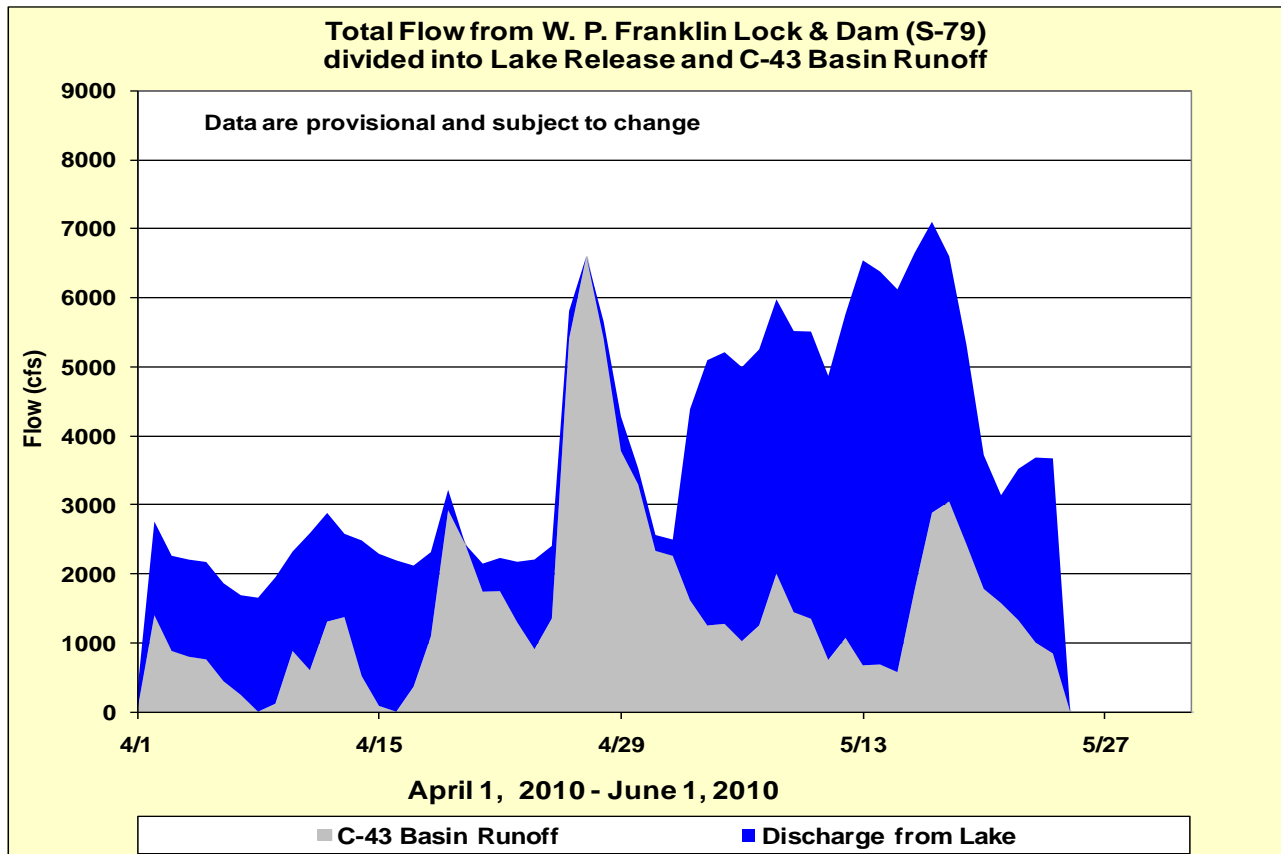
**Total Flow from St. Lucie Lock and Dam (S-80)
divided into Lake Release and C-44 Basin Runoff**











GREATER EVERGLADES

Rainfall:

Light rain fell across the Greater Everglades this week (see Raindar image and below) ranging from 0.32 inches to 0.90 inches. Everglades National Park (ENP) experienced the highest localized rainfall of 4.69 inches.

<u>Rain:</u>	WCA-1:	0.90 inches	WCA-3A:	0.64 inches
	WCA-2A:	0.70 inches	WCA-3B:	0.54 inches
	WCA-2B:	0.32 inches	ENP:	0.73 inches

Water Conservation Areas:

Stages declined or stayed the same throughout the Greater Everglades with evaporation of 1.50 inches exceeding basin rainfall. Weekly stage declines (see WCA Stages spreadsheet and below) ranged from -0.17 feet at gauges 62 in northwestern WCA-3A and EDEN-13 in WCA-2B to essentially no changes in WCA-2A and northern ENP. Recession rates were mostly good or fair throughout the region.

<u>Stage Change:</u>	WCA-1:	-0.13 feet	WCA-3A:	-0.12 feet
	WCA-2A:	0.00 feet	WCA-3B:	-0.06 feet
	WCA-2B:	-0.17 feet	NESRS:	0.01 feet

This week's dry season water depths have changed little in the last few months (see Water Depths map) but the recent recession rates are translating into depths that are slightly shallower than one and two months ago. This week's depths (see Depth differences map) are similar to those a week ago and generally drier than a month ago, particularly in the conservation areas; however, conditions are deeper in ENP than they were a month ago. For the first time since February, conditions in the Park are drier than they were a year ago. However, in the Conservation Areas, conditions are still much wetter than they were last year at this time.

Depths considered good for wading bird feeding (green) have expanded (see Birds-Depths maps), though large areas of WCA-1 and -3 are still too deep. Good recession rates (green) have occurred widely throughout the Greater Everglades with local exceptions in central and northwestern WCA-3A and in the Park (see Birds-Recession rates maps). While most of the entire region north of ENP remains too deep for wading bird foraging, conditions have improved over the last three weeks.

Regulation stages (see Regulation schedules) declined most of this week. WCA-1 marsh stages are approximately 0.3 feet above regulation. Marsh stages in WCA-2A are 0.8 feet above regulation stages while the canal stage is -1.3 feet below regulation. The marsh and canal stages in WCA-3A are close to regulation.

No fires were reported this week in the Greater Everglades.

Everglades National Park (ENP) and Florida Bay:

Light rain fell across most of Everglades National Park and Florida Bay, with moderate to heavy rain falling in the northeastern portion of the ENP wetlands and extreme western Florida Bay. ENP stations measured 0 inches to 1.2 inches of rainfall over the seven day period, and the basin-wide, spatially averaged weekly Raindar totals were 0.6 inches and 0.4 inches for the ENP and C-111 basins, respectively (image below).

Stages generally increased across ENP wetland stations (see Stages_100524). Water levels in Shark River Slough and at the Taylor Slough Bridge increased +0.8 inches and +5.7 inches, respectively. To the south, water level in the ENP panhandle increased +1.0 inches but dropped -0.3 inches in Craighead Basin.

Salinity was generally stable or increased across Florida Bay. In the near shore eastern Bay, salinity was steady in the middle-upper 20s in Long Sound and at the Little Madeira Bay platform (see Salinity_LM_WB_100524). Further into the Bay in Duck Key Basin, salinity was steady in the lower 30s. The 30 day moving average salinity at the Taylor River platform (used for tracking the Florida Bay Minimum Flows and Levels Rule) increased from 6.1 practical salinity units (psu) up to 7.8 psu, and the daily average salinity more than doubled from 6.3 psu up to 13.4 psu (see Salinity_TR_100524). In the north central Bay, salinity increased from 30 psu up to middle 30s before becoming variable late week and dropping back to near 30 psu by week's end in McCormick Creek. Terrapin Bay salinity followed a similar trajectory with salinity increasing from the low 30s up to the middle 30s before dropping back to the middle-upper 30s. At the central Bay platform in Whipray Basin, salinity was steady in

the middle-upper 30s (see Salinity_LM_WB_100524). To the west, in the upstream reaches of Shark River Slough, salinity increased from 6.3 psu up to 11.3 psu.

Exotic fish species: Sampling conducted by Audubon of Florida indicates that the winter's extreme cold weather caused a massive fish kill, mainly eradicating invasive species such as the Mayan cichlids at seven sites in ENP. However, recent collection efforts by Florida International University found numerous cichlids in canals peripheral to the Park, so it appears that the canals serve as thermal reserves for this exotic species.

Birds and Wildlife

Wading Birds: No survey was conducted this week. This is the second week in succession that recession rates have been optimal for wading bird foraging over much of the Everglades. Last week water depths were generally too deep for foraging but now a number of areas in the system are available to foraging birds. It will be interesting to see whether these improving conditions prompt any late breeding activity.

Snail Kites: A kite survey was initiated last week but is not yet completed. Of note is the failure of four nests; three in central WCA 3A and one in WCA 3B (see Snail Kite map). Failure was possibly due to low water levels as depths below nests were relatively low (9 - 40 cm). One failed nest in 3A contained dead nestlings, suggesting that failure in this case was not related to predation but perhaps caused by reduced availability of snails at low water levels (reduced snail movement and aestivation). Better news is that two nests in 3B have fledged and two nests remain active. The status of the other nests in the system is not yet known and will be available next week.

Cape Sable Seaside Sparrow: No recent surveys are available. Water levels at NP205 are currently approaching 5.0 feet equating to approximately 100% of the habitat available for nesting. However, stages at P34 rose above ground levels last week suggesting that the southern portion of sub-population A habitat may be a little wet for nesting.

Water Management Recommendations

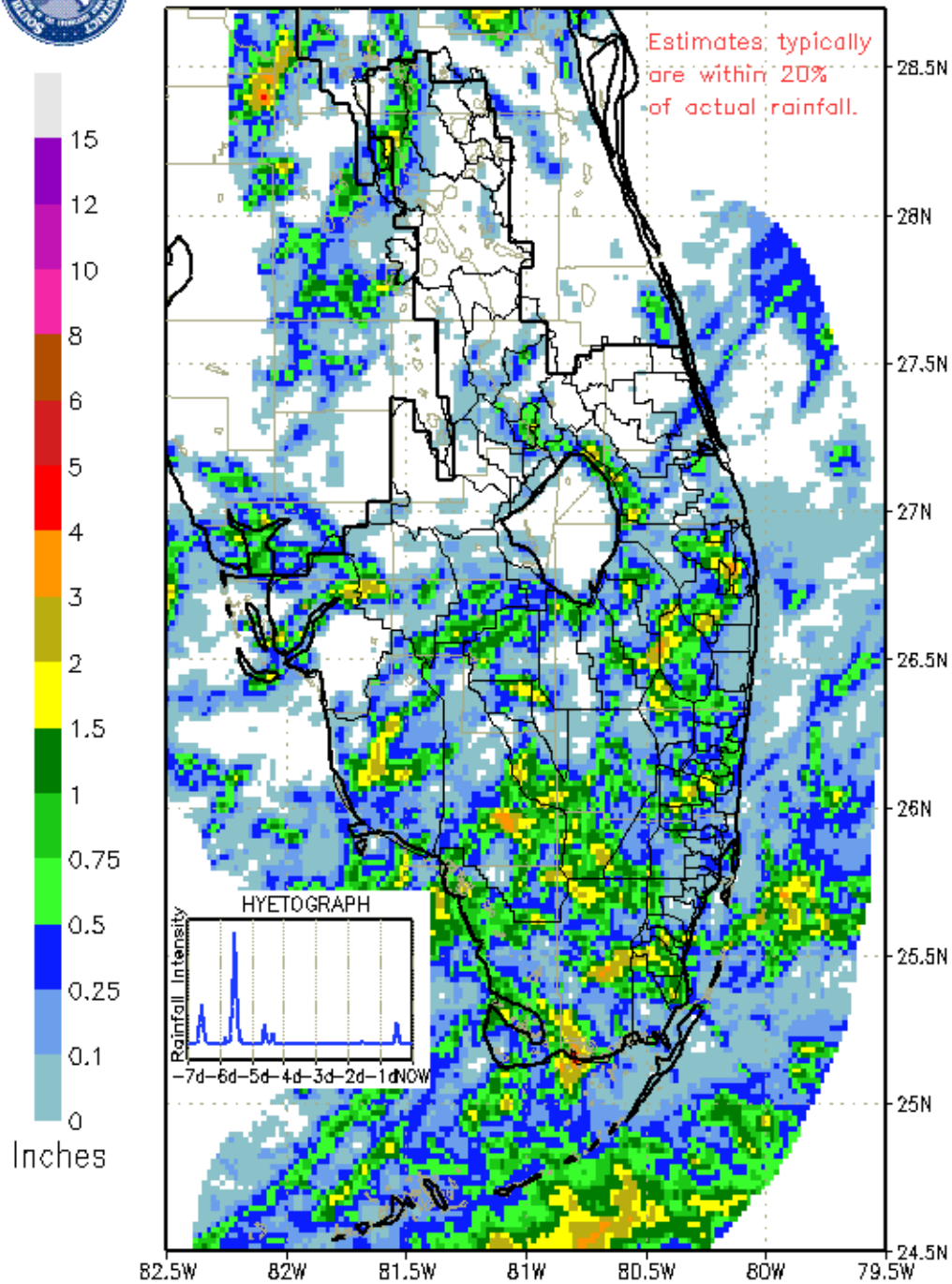
The majority of active kite nests in 3A are found in the drier, central region and there is concern that water levels below nests will become too shallow to deter mammalian nest predators and will limit snail availability. Most nests will remain active for at least another month and current depths below nests range between 4.7-11.4 inches. To prevent drying under nests we should aim for a recession rate of no faster than 0.05 feet/week. Indeed slow increases in depths in 3A and 3B may benefit remaining kites.

Attachments

Raindar:



SFWMD RAINDAR 7-DAY RAINFALL ESTIMATES
FROM: 0515 EST, 05/18/2010 THROUGH: 0515 EST, 05/25/2010



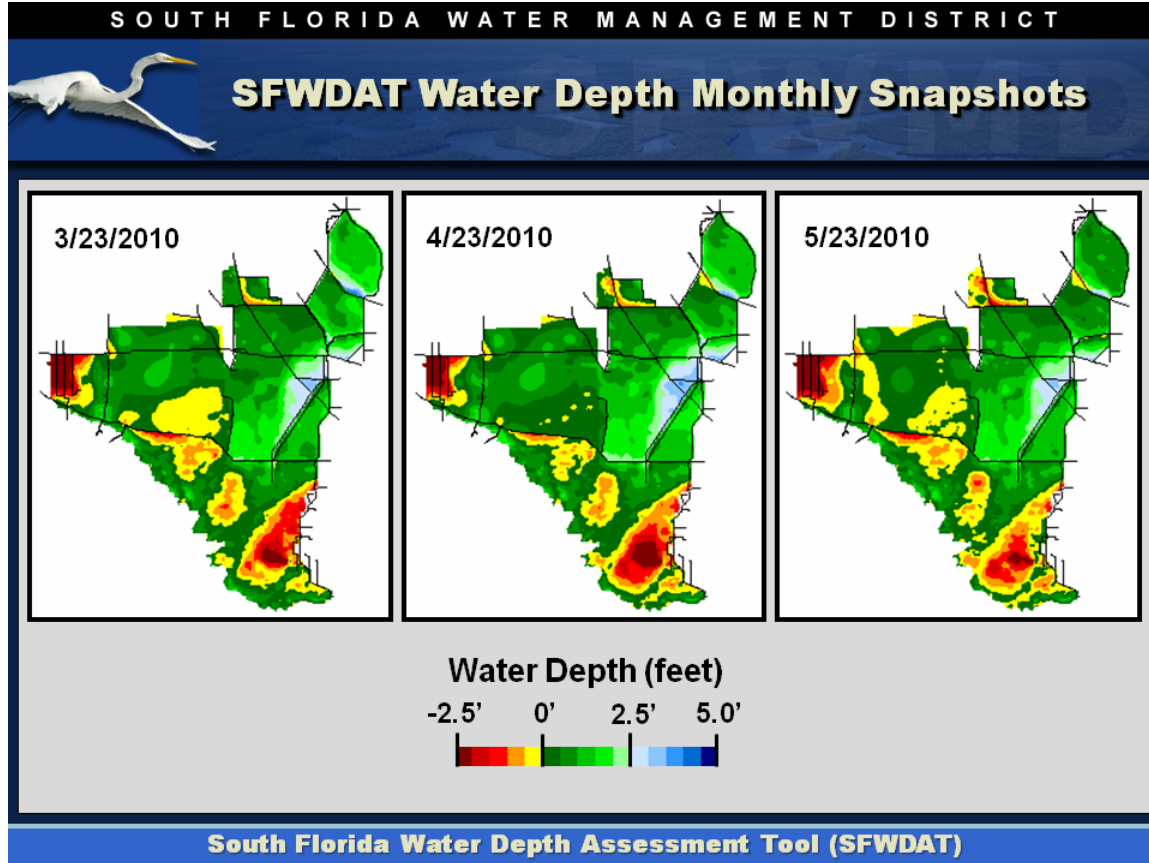
GRADS: COLA/IGES

DISTRICT-WIDE RAINFALL ESTIMATE: 0.329"

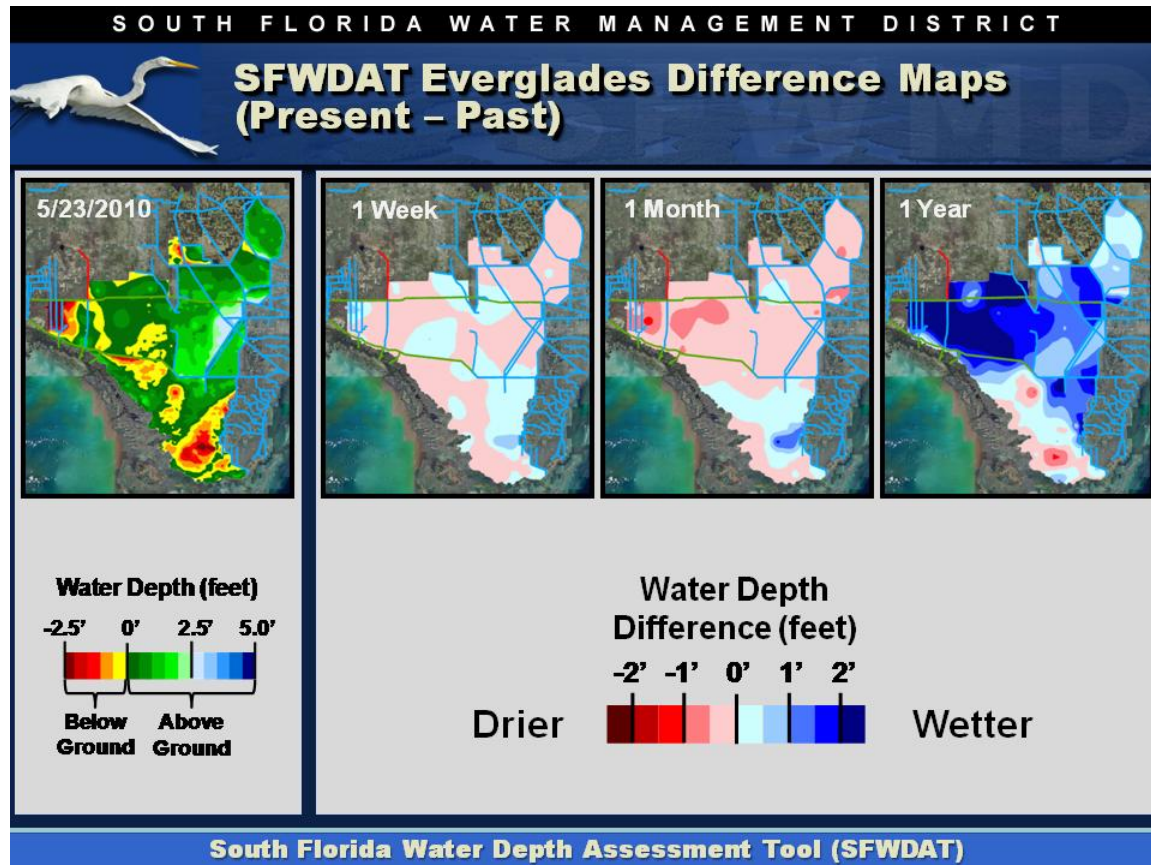
WCA Stages spreadsheet:

WCA and ENP Hydrology Data with Environmental Ratings																											
Area	Gage	Ground Elevation	Stage 12/22/09	Stage 12/29/09	Stage 1/5/10	Stage 1/12/10	Stage 1/19/10	Stage 1/26/10	Stage 2/2/10	Stage 2/9/10	Stage 2/16/10	Stage 2/23/10	Stage 3/2/10	Stage 3/9/10	Stage 3/16/10	Stage 3/23/10	Stage 3/30/10	Stage 4/6/10	Stage 4/13/10	Stage 4/20/10	Stage 4/27/10	Stage 5/4/10	Stage 5/11/10	Stage 5/18/10	Stage 5/25/10	Stage Change	
WCA-1	1-7	15.4	16.72	16.66	16.62	16.57	16.61	16.58	16.57	16.55	16.57	16.52	16.59	16.53	16.68	16.77	16.77	16.65	16.70	16.66	16.76	16.58	16.61	16.51	16.41	-0.10	
	1-9	14.7	16.74	16.68	16.64	16.60	16.60	16.56	16.56	16.55	16.56	16.51	16.61	16.53	16.60	16.75	16.71	16.52	16.49	16.43	16.52	16.36	16.31	16.23	16.13	-0.10	
	1-8T		16.77	16.72	16.67	16.63	16.62	16.58	16.58	16.58	16.60	16.51	16.60	16.47	16.86	16.76	16.60	16.31	16.26	16.25	16.39	16.15	15.99	15.86	15.67	-0.19	
WCA-2A	2-17	11.1	12.48	12.25	12.01	11.88	11.82	11.75	11.71	11.67	11.65	11.60	11.74	11.77	11.85	11.96	12.42	12.24	12.15	12.06	12.17	11.96	11.87	11.80	11.80	0.00	
WCA-2B	99	6.8	10.65	10.56	10.44	10.37	10.37	10.31	10.34	10.24	10.20	10.11	10.13	10.05	10.06	9.97	10.25	10.22	10.23	10.28	10.45	10.32	10.14	9.97	9.81	-0.16	
	EDEN-13	6.7	9.10	9.00	8.89	8.85	8.85	8.83	8.79	8.69	8.66	8.60	8.60	8.52	8.52	8.43	8.73	8.68	8.69	8.72	8.87	8.76	8.59	8.42	8.25	-0.17	
WCA-3A	62	10.1	10.88	10.82	10.79	10.75	10.75	10.80	10.78	10.77	10.79	10.85	10.85	11.01	11.10	11.31	11.19	11.11	11.27	11.46	11.49	11.40	11.47	11.30	11.30	-0.17	
	63	9.08	10.19	10.28	10.29	10.15	10.13	10.18	10.17	10.07	9.97	9.97	9.91	9.96	10.01	10.47	10.43	10.35	10.36	10.59	10.49	10.31	10.13	9.97	9.97	-0.16	
	64	8.49	10.26	10.24	10.23	10.22	10.30	10.26	10.25	10.23	10.15	10.09	10.05	9.94	9.92	9.85	10.01	9.98	9.95	10.03	10.15	10.12	10.01	9.90	9.81	-0.09	
	65	7.3	9.91	9.88	9.88	9.91	9.92	9.87	9.90	9.85	9.77	9.67	9.65	9.51	9.43	9.33	9.42	9.35	9.31	9.45	9.61	9.54	9.41	9.31	9.26	-0.05	
WCA-3B	76	6.32	7.64	7.59	7.56	7.56	7.62	7.57	7.78	7.71	7.66	7.60	7.61	7.56	7.53	7.54	7.72	7.66	7.73	7.85	7.97	7.86	7.74	7.68	7.61	-0.07	
	71	6.52	7.95	7.90	7.88	7.89	7.90	7.90	7.91	7.94	7.91	7.88	7.89	7.83	7.82	7.79	7.94	7.82	7.83	7.97	8.06	7.95	7.86	7.78	7.73	-0.05	
	SRS1	6.23	7.56	7.49	7.42	7.41	7.41	7.40	7.41	7.41	7.40	7.48	7.36	7.37	7.34	7.45	7.38	7.41	7.47	7.71	7.60	7.49	7.47	7.40	7.40	-0.07	
ENP	NESRS2	5.62	6.77	6.67	6.60	6.57	6.55	6.50	6.54	6.61	6.72	6.74	6.77	6.74	6.78	6.78	6.86	6.82	6.83	6.88	7.11	6.94	6.86	6.83	6.84	0.01	
WCA-1	1-7	1.32	-0.06	-0.04	-0.05	0.04	-0.03	-0.01	-0.02	0.02	-0.05	0.07	-0.06	0.15	0.09	0.00	-0.12	0.05	-0.04	0.10	-0.18	0.03	-0.10	-0.10	-0.10	Good	
	1-9	2.04	-0.06	-0.04	0.00	-0.04	0.00	-0.01	0.01	-0.05	0.10	-0.08	0.07	0.15	-0.04	-0.19	-0.03	-0.06	0.09	-0.16	-0.05	-0.08	-0.08	-0.08	-0.10	Good	
	1-8T	16.77	-0.05	-0.05	-0.04	-0.01	-0.04	0.00	0.00	0.02	-0.09	0.09	-0.13	0.39	-0.10	-0.16	-0.29	-0.05	-0.01	0.14	-0.24	-0.16	-0.13	-0.19	-0.19	Fair	
WCA-2A	2-17	1.38	-0.23	-0.24	-0.13	-0.06	-0.07	-0.04	-0.04	-0.02	-0.05	0.14	0.03	0.08	0.11	0.46	-0.18	-0.09	-0.09	0.11	-0.21	-0.09	-0.07	0.00	Fair		
WCA-2B	99	3.85	-0.09	-0.12	-0.07	0.00	-0.06	0.03	-0.10	-0.04	-0.09	0.02	-0.08	0.01	-0.09	0.28	-0.03	0.01	0.05	0.17	-0.13	-0.18	-0.17	-0.16	Good		
	EDEN-13	2.40	-0.10	-0.11	-0.04	0.00	-0.02	-0.04	-0.11	-0.03	-0.06	0.00	-0.08	0.00	-0.09	0.30	-0.05	0.01	0.03	0.15	-0.11	-0.17	-0.17	-0.17	-0.17	Fair	
WCA-3A	62	0.78	-0.06	-0.03	-0.04	0.00	0.00	0.05	-0.02	-0.01	0.02	0.06	0.00	0.16	0.09	0.21	-0.12	-0.08	0.16	0.19	0.03	-0.09	0.07	-0.17	Fair		
	63	1.11	0.09	0.01	-0.09	-0.05	-0.02	0.05	-0.01	-0.10	-0.10	0.00	-0.06	0.05	0.05	0.46	-0.04	-0.08	0.01	0.23	-0.10	-0.18	-0.18	-0.16	Good		
	64	1.77	-0.02	-0.01	-0.01	0.08	-0.04	-0.01	-0.02	-0.08	-0.06	-0.04	-0.11	-0.02	-0.07	0.16	-0.03	-0.03	0.08	0.12	-0.03	-0.11	-0.11	-0.09	Good		
	65	2.61	-0.03	0.00	0.03	0.01	-0.05	0.03	-0.05	-0.08	-0.10	-0.02	-0.14	-0.08	-0.10	0.09	-0.07	-0.04	0.14	0.16	-0.07	-0.13	-0.10	-0.05	Good		
WCA-3B	76	1.32	-0.05	-0.03	0.00	0.06	-0.05	0.21	-0.07	-0.05	-0.06	0.01	-0.05	-0.03	0.01	0.18	-0.06	0.07	0.12	0.12	-0.11	-0.12	-0.06	-0.07	Good		
	71	1.43	-0.05	-0.02	0.01	0.01	0.00	0.01	0.03	-0.03	0.01	-0.06	-0.01	-0.03	0.15	-0.12	0.01	0.14	0.09	-0.11	-0.09	-0.08	-0.08	-0.05	Good		
	SRS1	1.33	-0.07	-0.07	-0.01	0.00	-0.01	0.01	0.00	0.00	-0.01	0.00	-0.04	0.01	-0.03	0.11	-0.07	0.03	0.06	0.24	-0.11	-0.11	-0.02	-0.07	Good		
ENP	NESRS2	1.15	-0.10	-0.07	-0.03	-0.02	-0.05	0.04	0.07	0.11	0.02	0.03	-0.03	0.04	0.00	0.08	-0.04	0.01	0.05	0.23	-0.17	-0.08	-0.03	0.01	Poor		
WCA-1	1-7	1.32	1.26	1.22	1.17	1.21	1.18	1.17	1.15	1.17	1.12	1.19	1.13	1.28	1.37	1.37	1.25	1.30	1.26	1.36	1.18	1.21	1.11	1.01	Foraging water depths		
	1-9	2.04	1.98	1.94	1.90	1.90	1.86	1.86	1.85	1.86	1.81	1.91	1.83	1.90	2.05	2.01	1.82	1.79	1.73	1.82	1.66	1.61	1.53	1.43	Poor		
	1-8T																										
WCA-2A	2-17	1.38	1.15	0.91	0.78	0.72	0.65	0.61	0.57	0.55	0.50	0.64	0.67	0.75	0.86	1.32	1.14	1.05	0.96	1.07	0.86	0.77	0.70	0.70	0.70	Good	
WCA-2B	99	3.85	3.76	3.64	3.57	3.57	3.51	3.54	3.44	3.40	3.31	3.33	3.25	3.26	3.17	3.45	3.42	3.43	3.48	3.65	3.52	3.34	3.17	3.01	Poor		
	EDEN-13	2.40	2.30	2.19	2.15	2.15	2.13	2.09	1.99	1.96	1.90	1.90	1.82	1.82	1.73	2.03	1.98	1.99	2.02	2.17	2.06	1.89	1.72	1.55	Poor		
WCA-3A	62	0.78	0.72	0.69	0.65	0.65	0.65	0.70	0.68	0.67	0.69	0.75	0.75	0.91	1.00	1.21	1.09	1.01	1.17	1.36	1.39	1.30	1.37	1.20	Poor		
	63	1.11	1.20	1.21	1.12	1.07	1.05	1.10	1.09	0.99	0.89	0.89	0.83	0.88	0.93	1.39	1.35	1.27	1.28	1.51	1.41	1.23	1.05	0.89	Good		
	64	1.77	1.75	1.74	1.73	1.81	1.77	1.76	1.74	1.66	1.60	1.56	1.45	1.43	1.36	1.52	1.49	1.46	1.54	1.66	1.63	1.52	1.41	1.32	Poor		
	65	2.61	2.58	2.58	2.61	2.62	2.57	2.60	2.55	2.47	2.37	2.35	2.21	2.13	2.03	2.12	2.05	2.01	2.15	2.31	2.24	2.11	2.01	1.96	Poor		
WCA-3B	76	1.32	1.27	1.24	1.24	1.30	1.25	1.46	1.39	1.34	1.28	1.29	1.24	1.21	1.22	1.40	1.34	1.41	1.53	1.65	1.54	1.42	1.36	1.29	Poor		
	71	1.43	1.38	1.36	1.37	1.38	1.38	1.39	1.42	1.39	1.36	1.37	1.31	1.30	1.27	1.42	1.30	1.31	1.45	1.54	1.43	1.34	1.26	1.21	Poor		
	SRS1	1.33	1.26	1.19	1.18	1.18	1.17	1.18	1.18	1.18	1.17	1.17	1.13	1.14	1.11	1.22	1.15	1.18	1.24	1.48	1.37	1.26	1.24	1.17	Poor		
ENP	NESRS2	1.15	1.05	0.98	0.95	0.93	0.88	0.92	0.99	1.10	1.12	1.15	1.12	1.16	1.16	1.24	1.20	1.21	1.26	1.49	1.32	1.24	1.21	1.22	Poor		
Recession rates: Criteria for rating wading bird nesting success during dry season - numbers represent 1 week changes in stage														Water depth (ft) criteria for wading bird nesting success during the dry season (One week averages)													
Poor: -0.17 to -0.59 for > 2 wks or < -0.60 for one week														Poor: > 1.0'													
Fair: -0.17 to -0.59 for one week														Fair: 0.80 ft to 1.0 ft													
Good: -0.05 to -0.16														Good: 0.1 ft to 0.79 ft													
Fair: -0.04 to +0.04 for one week														Fair: -0.02 ft to 0.09 ft													

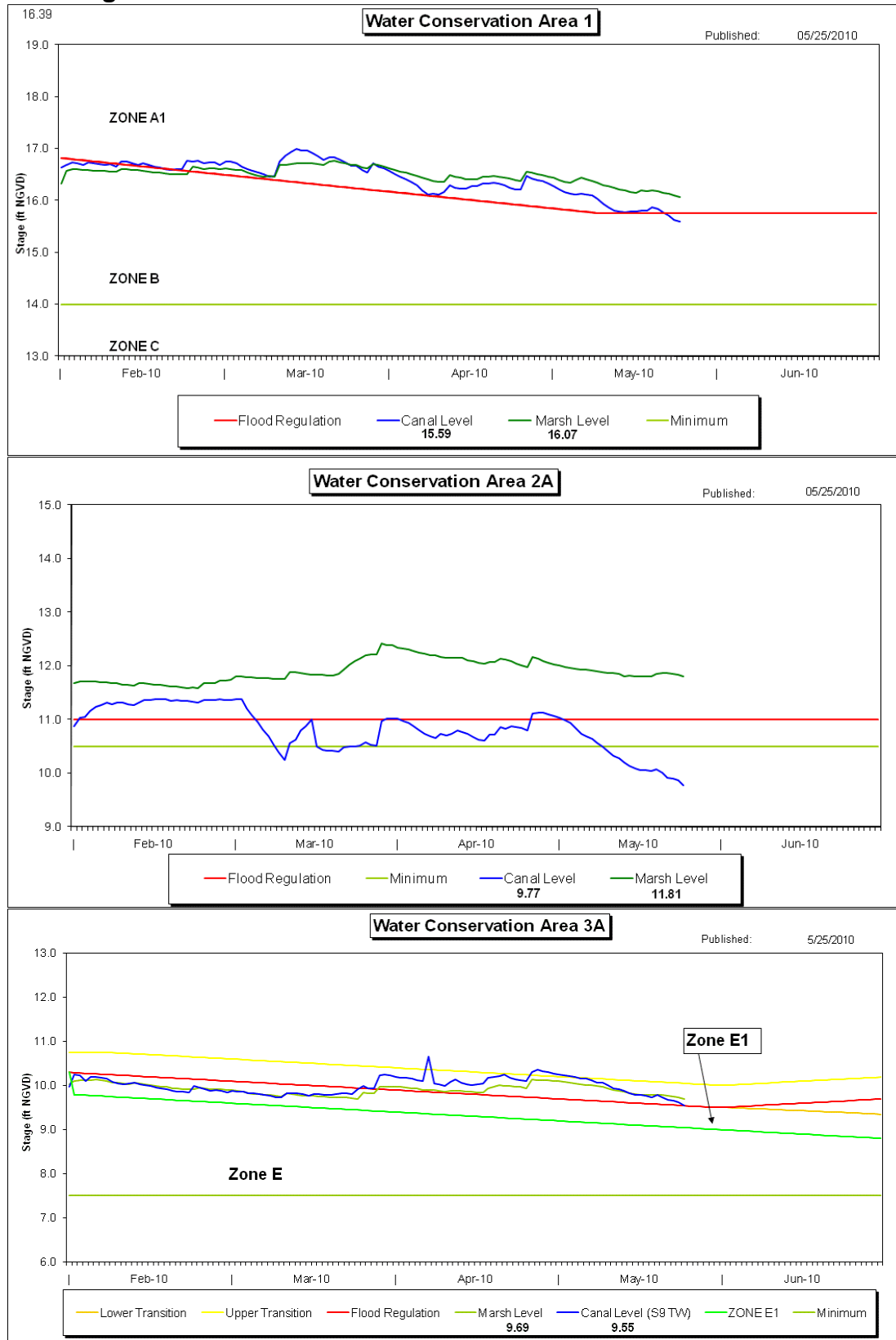
Water Depths:



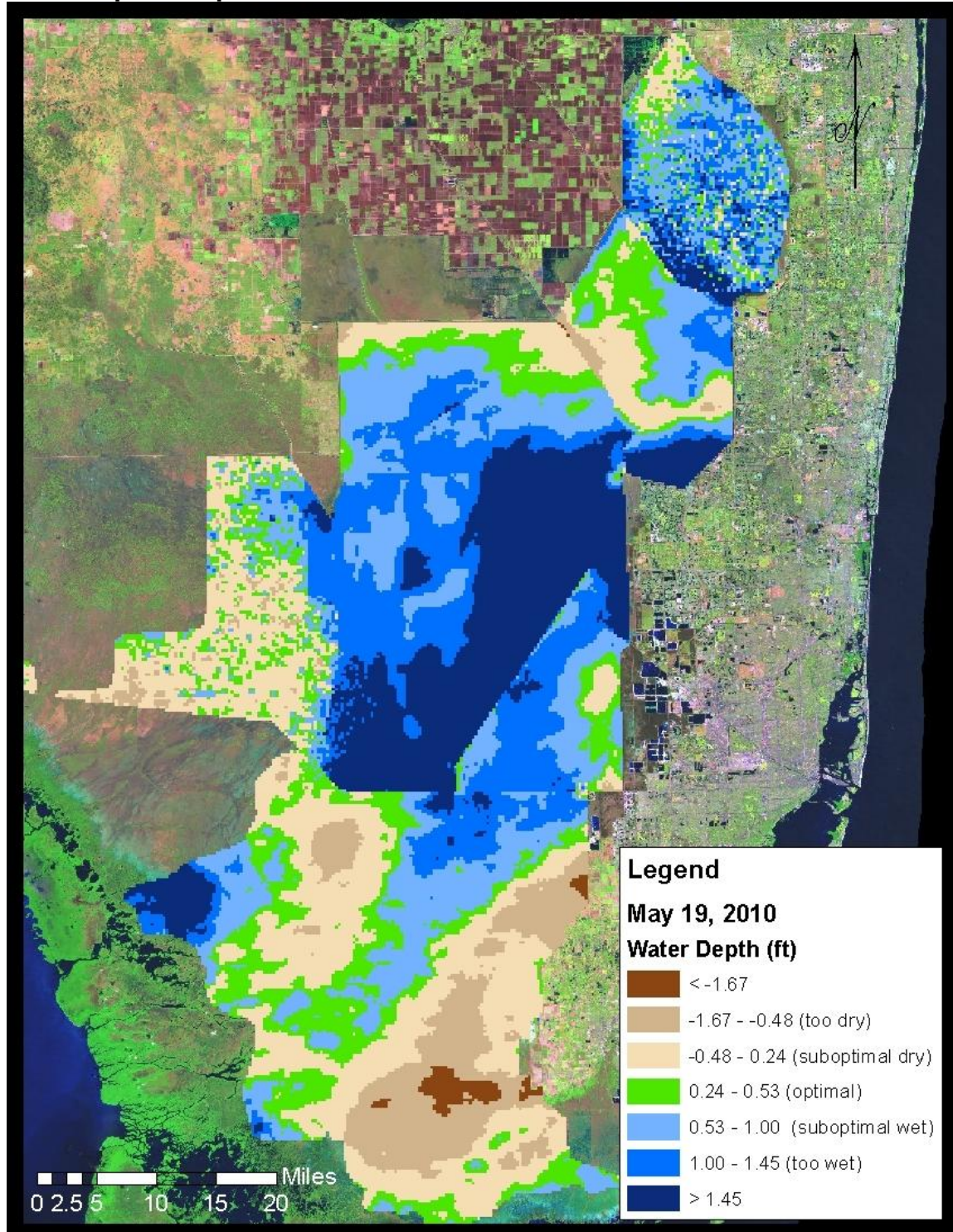
Depth Differences:



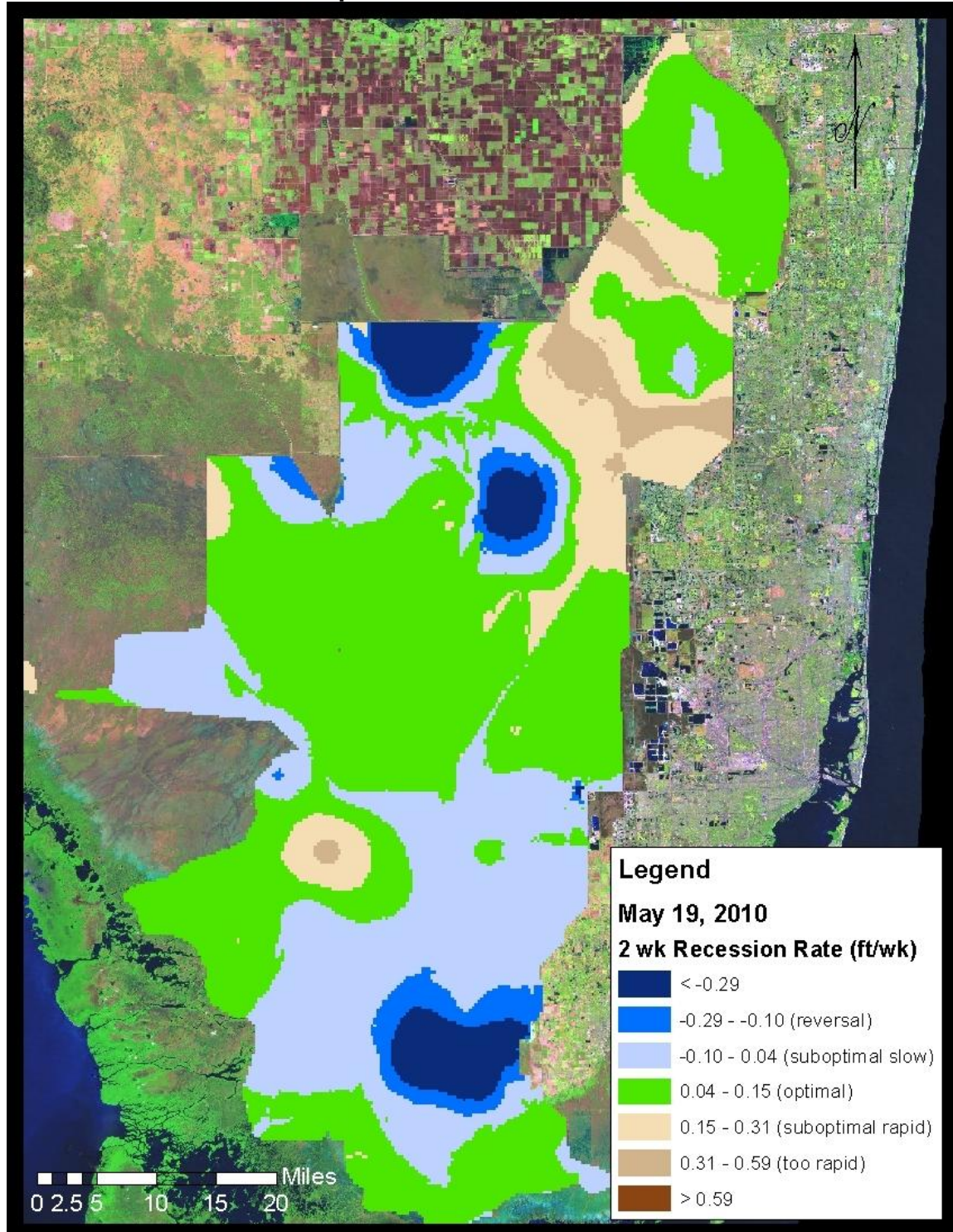
WCA Regulation Schedules:



Birds-Depths map

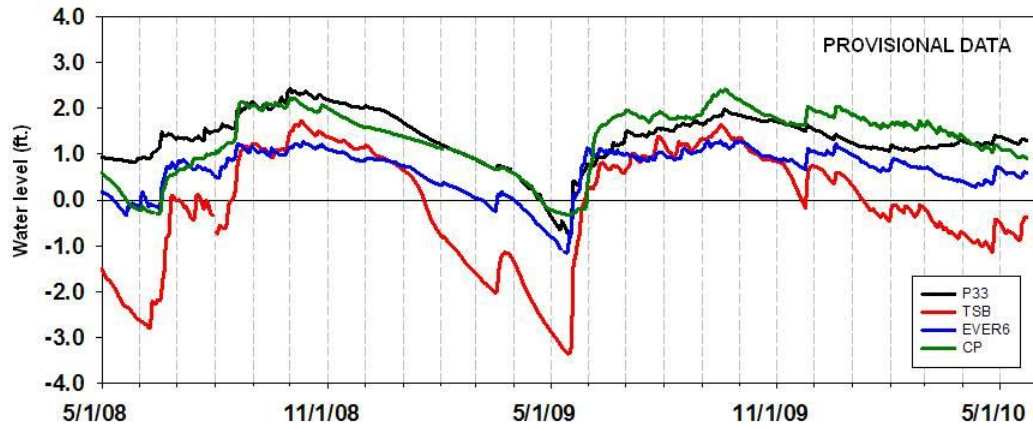


Birds-Recession Rates map



ENP Stages:

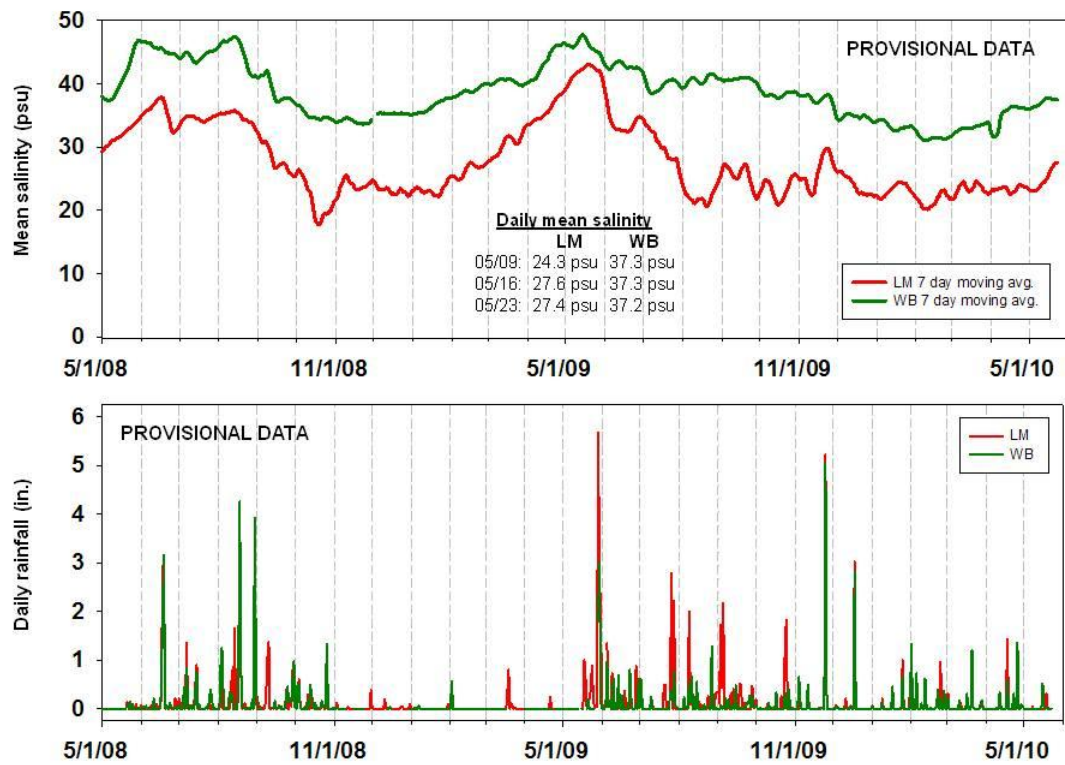
Water Levels at ENP Wetland Monitoring Stations



DAILY MEAN WATER LEVEL				
Date	P33	TSB	EVER6	CP
5/09	1.30	-0.69	0.60	1.10
5/16	1.23	-0.86	0.51	0.93
5/23	1.30	-0.38	0.59	0.91

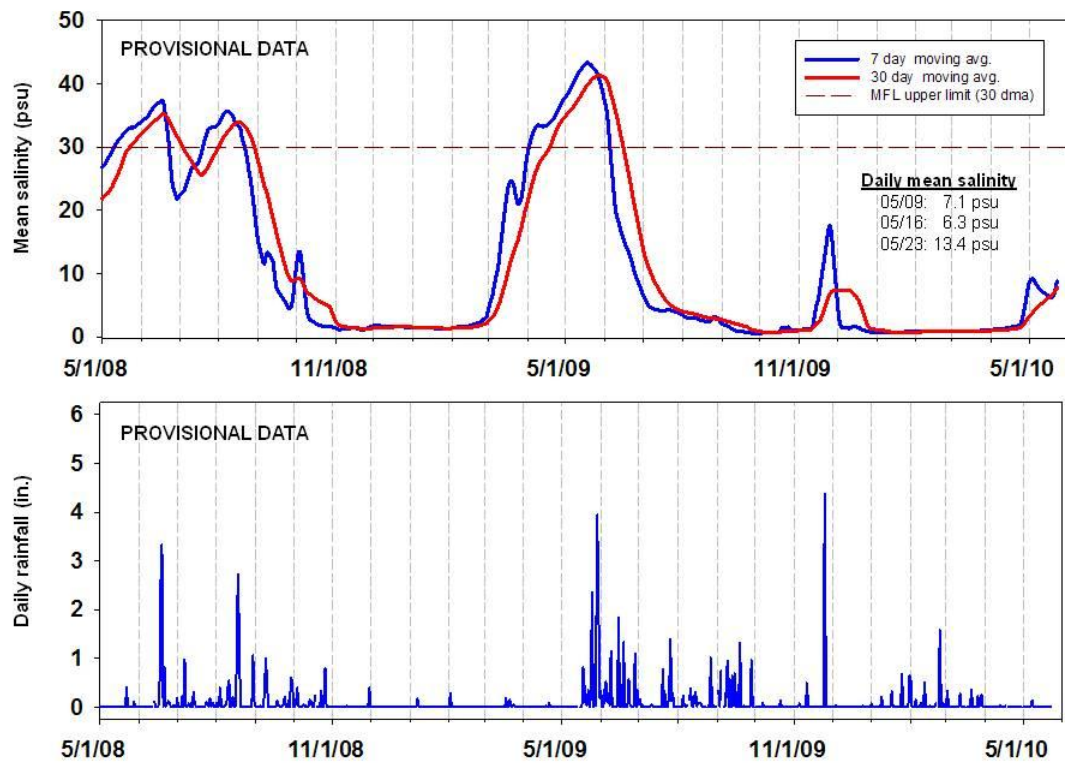
ENP LM/WB Salinity:

Salinity and Rainfall in Little Madeira Bay (station LM) and Whipray Basin (station WB)



ENP MFL/TR Salinity:

Salinity, Florida Bay MFL Tracking, and Rainfall in Taylor River Ponds (station TR)



Snail Kite Nests, early May 2010:

